

In the Claims

1. (Currently Amended) A computerized method for encoding an instance document representing a content description, the method comprising:

determining a context node from a plurality of context nodes in the content description, the plurality of context nodes corresponding to a description schemes for a particular multimedia content described by the instance document, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures;

obtaining a schema associated with the context node, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order;

creating a required attributes section containing a value for each required attribute for the context node;

creating an optional attributes section containing a value for each optional attribute for the context node that appears in the content description;

creating a required elements section containing a value for each required element for the context node; and

creating an optional elements section containing a value for each optional element for the context node that appears in the content description.

2. (Previously Presented) The computerized method of claim 1, wherein creating the optional attributes section comprises:

including a mask in a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

3. (Previously Presented) The computerized method of claim 2, wherein creating the optional attributes section further comprises:

including an order field in the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

4. (Previously Presented) The computerized method of claim 1, wherein creating the optional attributes section comprises:

including an order field in a header of the optional attributes section, the order field indicating that the optional attributes present in the content do not correspond to the order of the optional attributes in the schema;

including a number field in the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description; and

associating an attribute identifier with the value of each optional attribute present in the content description.

5. (Original) The computerized method of claim 1, wherein creating the required elements section comprises:

associating an element identifier with the value for a required element if the schema defines a choice of values for the corresponding required element.

6. (Original) The computerized method of claim 1, wherein creating the required elements section comprises

including a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

7. (Previously Presented) The computerized method of claim 1, wherein creating the optional elements section comprises:

including a mask in a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

8. (Original) The computerized method of claim 7, wherein creating the optional elements section further comprises:

including an order field in the header of the optional elements section, the order field indicating the optional elements present in the content description correspond to the order of the optional elements in the schema.

9. (Original) The computerized method of claim 7, wherein creating the optional elements section further comprises:

associating a repeat field with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

10. (Previously Presented) The computerized method of claim 1, wherein creating the optional elements section comprises:

including an order field in a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema;

including a number field in the header of the optional elements section, the number field indicating a count of the optional elements present in the content description; and

associating an element identifier with the value of each optional element present in the content description.

11. (Original) The computerized method of claim 10, wherein creating the optional elements section further comprises:

associating a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

associating the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

12. (Original) The computerized method of claim 1, wherein creating the required attributes section comprises:

associating an element identifier with the value of each required attribute.

13. (Previously Presented) The computerized method of claim 1, wherein creating the optional attributes section comprises:

associating an attribute identifier with the value of each optional attribute present in the content.

14. (Previously Presented) The computerized method of claim 1, wherein creating the required elements section comprises:

associating an element identifier with the value of each required element.

15. (Previously Presented) The computerized method of claim 14, wherein creating the required elements section further comprises:

including a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

16. (Previously Presented) The computerized method of claim 1, wherein creating the optional elements section comprises:

associating an element identifier with the value of each optional element present in the content description.

17. (Previously Presented) The computerized method of claim 16, wherein creating the optional elements section further comprises:

associating a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

associating the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

18. (Previously Presented) The computerized method of claim 1 further comprising:
creating a reset field, the reset field specifying a different context node in the content description.

19. (Currently Amended) A computer-readable storage medium having executable instructions to cause a computer to perform a method comprising:

determining a context node from a plurality of context nodes in a content description, the plurality of context nodes corresponding to a description schemes for a particular multimedia content described by an instance document, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures;

obtaining a schema associated with the context node, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order;

creating a required attributes section containing a value for each required attribute for the context node;

creating an optional attributes section containing a value for each optional attribute for the context node that appears in the content description;

creating a required elements section containing a value for each required element for the context node; and

creating an optional elements section containing a value for each optional element for the context node that appears in the content description.

20. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional attributes section comprises:

including a mask in a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

21. (Previously Presented) The computer-readable medium of claim 20, wherein creating the optional attributes section further comprises:

including an order field in the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

22. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional attributes section comprises:

including an order field in a header of the optional attributes section, the order field indicating that the optional attributes present in the content do not correspond to the order of the optional attributes in the schema;

including a number field in the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description; and

associating an attribute identifier with the value of each optional attribute present in the content description.

23. (Previously Presented) The computer-readable medium of claim 19, wherein creating the required elements section comprises:

associating an element identifier with the value for a required element if the schema defines a choice of values for the corresponding required element.

24. (Previously Presented) The computer-readable medium of claim 19, wherein creating the required elements section comprises

including a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

25. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional elements section comprises:

including a mask in a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

26. (Previously Presented) The computer-readable medium of claim 25, wherein creating the optional elements section further comprises:

including an order field in the header of the optional elements section, the order field indicating that the optional elements present in the content description correspond to the order of the optional elements in the schema.

27. (Previously Presented) The computer-readable medium of claim 25, wherein creating the optional elements section further comprises:

associating a repeat field with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

28. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional elements section comprises:

including an order field in a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema;

including a number field in the header of the optional elements section, the number field indicating a count of the optional elements present in the content description; and

associating an element identifier with the value of each optional element present in the content description.

29. (Previously Presented) The computer-readable medium of claim 28, wherein creating the optional elements section further comprises:

associating a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

associating the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

30. (Previously Presented) The computer-readable medium of claim 19, wherein creating the required attributes section comprises:

associating an element identifier with the value of each required attribute.

31. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional attributes section comprises:

associating an attribute identifier with the value of each optional attribute present in the content.

32. (Previously Presented) The computer-readable medium of claim 19, wherein creating the required elements section comprises:

associating an element identifier with the value of each required element.

33. (Previously Presented) The computer-readable medium of claim 32, wherein creating the required elements section further comprises:

including a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

34. (Previously Presented) The computer-readable medium of claim 19, wherein creating the optional elements section comprises:

associating an element identifier with the value of each optional element present in the content description.

35. (Previously Presented) The computer-readable medium of claim 34, wherein creating the optional elements section further comprises:

associating a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

associating the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

36. (Previously Presented) The computer-readable medium of claim 19, wherein the method further comprises:

creating a reset field, the reset field specifying a different context node in the content description.

37. (Currently Amended) A system comprising:

a processor coupled to a bus;

a memory coupled to the processor through the bus; and

an encode process executed by the processor from the memory to cause the processor to

determine a context node from a plurality of context nodes in a content description, the plurality of context nodes corresponding to a description schemes for a particular multimedia content described by an instance document, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures,

obtain a schema associated with the context node, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order,

create a required attributes section containing a value for each required attribute for the context node,

create an optional attributes section containing a value for each optional attribute for the context node that appears in the content description,

create a required elements section containing a value for each required element for the context node, and

create an optional elements section containing a value for each optional element for the context node that appears in the content description.

38. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional attributes section, to include a mask in a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

39. (Previously Presented) The system of claim 38, wherein the encode process further causes the processor, when creating the optional attributes section, to include an order field in the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

40. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional attributes section, to
include an order field in a header of the optional attributes section, the order field indicating that the optional attributes present in the content do not correspond to the order of the optional attributes in the schema,
include a number field in the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description, and
associate an attribute identifier with the value of each optional attribute present in the content description.

41. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the required elements section, to associate an element identifier with the value for a required element if the schema defines a choice of values for the corresponding required element.

42. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the required elements section, to include a terminator

field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

43. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional elements section, to include a mask in a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

44. (Previously Presented) The system of claim 43, wherein the encode process further causes the processor, when creating the optional elements section, to include an order field in the header of the optional elements section, the order field indicating that the optional elements present in the content description correspond to the order of the optional elements in the schema.

45. (Previously Presented) The system of claim 43, wherein the encode process further causes the processor, when creating the optional elements section, to associate a repeat field with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

46. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional elements section to
include an order field in a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema,
include a number field in the header of the optional elements section, the number field indicating a count of the optional elements present in the content description, and
associate an element identifier with the value of each optional element present in the content description.

47. (Previously Presented) The system of claim 46, wherein the encode process further causes the processor, when creating the optional elements section, to

associate a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences, and

associate the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

48. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the required attributes section, to associate an element identifier with the value of each required attribute.

49. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional attributes section, to associate an attribute identifier with the value of each optional attribute present in the content.

50. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the required elements section, to associate an element identifier with the value of each required element.

51. (Previously Presented) The system of claim 50, wherein the encode process further causes the processor, when creating the required elements section, to include a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

52. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor, when creating the optional elements section, to associate an element identifier with the value of each optional element present in the content description.

53. (Previously Presented) The system of claim 52, wherein the encode process further causes the processor, when creating the optional elements section, to

associate a repeat field with each value of an optional element if the schema defines the corresponding optional element as have multiple occurrences, and

associate the element identifier with only one value of the optional element if the schema defines the corresponding optional element as have multiple occurrences.

54. (Previously Presented) The system of claim 37, wherein the encode process further causes the processor to create a reset field specifying a different context node in the content description.

55. (Currently Amended) A computerized method for decoding an encoded instance document representing a content description, the method comprising:

obtaining a schema associated with a context node in the instance document, the context node being one of a plurality of context nodes corresponding to a description schemes for a particular multimedia content described by the instance document, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures;

extracting a value for each required attribute from a required attributes section when present in the encoded instance document;

extracting a value for each optional attribute that appears in the content description from an optional attributes section when present in the encoded instance document;

extracting a value for each required element from a required elements section when present in the encoded instance document; and

extracting a value for each optional element that appears in the content description from an optional elements section when present in the encoded instance document.

56. (Previously Presented) The computerized method of claim 55, wherein extracting from the optional attributes section comprises:

extracting a mask from a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

57. (Previously Presented) The computerized method of claim 56, wherein extracting from the optional attributes section further comprises:

extracting an order field from the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

58. (Previously Presented) The computerized method of claim 55, wherein extracting from the optional attributes section comprises:

extracting an order field from a header of the optional attributes section, the order field indicating that the optional attributes present in the content description do not correspond to the order of the optional attributes in the schema;

extracting a number field from the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description; and

extracting an attribute identifier associated with the value of each optional attribute present in the content description.

59. (Previously Presented) The computerized method of claim 55, wherein extracting from the required elements section comprises:

extracting an element identifier associated with the value of a required element if the schema defines a choice of values for the corresponding required element.

60. (Previously Presented) The computerized method of claim 55, wherein extracting from the required elements section comprises

extracting a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

61. (Previously Presented) The computerized method of claim 55, wherein extracting from the optional elements section comprises:

extracting a mask from a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

62. (Previously Presented) The computerized method of claim 61, wherein extracting from the optional elements section further comprises:

extracting an order field from the header of the optional elements section, the order field indicating that the optional elements present in the content description correspond to the order of the optional elements in the schema.

63. (Previously Presented) The computerized method of claim 61, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

64. (Previously Presented) The computerized method of claim 55, wherein extracting from the optional elements section comprises:

extracting an order field from a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema;

extracting a number field from the header of the optional elements section, the number field indicating a count of the optional elements present in the content description; and

extracting an element identifier associated with the value of each optional element present in the content description.

65. (Previously Presented) The computerized method of claim 64, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

extracting the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

66. (Previously Presented) The computerized method of claim 55, wherein extracting from the required attributes section comprises:

extracting an element identifier associated with the value of each required attribute.

67. (Previously Presented) The computerized method of claim 55, wherein extracting from the optional attributes section comprises:

extracting an attribute identifier associated with the value of each optional attribute present in the content.

68. (Previously Presented) The computerized method of claim 55, wherein extracting from the required elements section comprises:

extracting an element identifier associated with the value of each required element.

69. (Previously Presented) The computerized method of 68, wherein extracting from the required elements section further comprises:

extracting a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

70. (Previously Presented) The computerized method of claim 55, wherein extracting the optional elements section comprises:

extracting an element identifier associated with the value of each optional element present in the content description.

71. (Previously Presented) The computerized method of claim 70, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

extracting the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

72. (Previously Presented) The computerized method of claim 55 further comprising:

extracting a reset field, the reset field specifying a different context node in the content description.

73. (Currently Amended) A computer-readable storage medium having executable instructions to cause a computer to perform a method comprising:

obtaining a schema associated with a context node in an instance document, the context node corresponding to a description scheme for a particular multimedia content described by an instance document, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures;

extracting a value for each required attribute from a required attributes section when present in the encoded instance document;

extracting a value for each optional attribute that appears in the content description from an optional attributes section when present in the encoded instance document;

extracting a value for each required element from a required elements section when present in the encoded instance document; and

extracting a value for each optional element that appears in the content description from an optional elements section when present in the encoded instance document.

74. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the optional attributes section comprises:

extracting a mask from a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

75. (Previously Presented) The computer-readable medium of claim 74, wherein extracting from the optional attributes section further comprises:

extracting an order field from the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

76. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the optional attributes section comprises:

extracting an order field from a header of the optional attributes section, the order field indicating that the optional attributes present in the content description do not correspond to the order of the optional attributes in the schema;

extracting a number field from the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description; and

extracting an attribute identifier associated with the value of each optional attribute present in the content description.

77. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the required elements section comprises:

extracting an element identifier associated with the value of a required element if the schema defines a choice of values for the corresponding required element.

78. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the required elements section comprises

extracting a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

79. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the optional elements section comprises:

extracting a mask from a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

80. (Previously Presented) The computer-readable medium of claim 79, wherein extracting from the optional elements section further comprises:

extracting an order field from the header of the optional elements section, the order field indicating that the optional elements present in the content description correspond to the order of the optional elements in the schema.

81. (Previously Presented) The computer-readable medium of claim 79, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

82. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the optional elements section comprises:

extracting an order field from a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema;

extracting a number field from the header of the optional elements section, the number field indicating a count of the optional elements present in the content description; and

extracting an element identifier associated with the value of each optional element present in the content description.

83. (Previously Presented) The computer-readable medium of claim 82, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

extracting the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

84. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the required attributes section comprises:

extracting an element identifier associated with the value of each required attribute.

85. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the optional attributes section comprises:

extracting an attribute identifier associated with the value of each optional attribute present in the content.

86. (Previously Presented) The computer-readable medium of claim 73, wherein extracting from the required elements section comprises:

extracting an element identifier associated with the value of each required element.

87. (Previously Presented) The computer-readable medium of claim 86, wherein extracting from the required elements section further comprises:

extracting a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

88. (Previously Presented) The computer-readable medium of claim 73, wherein extracting the optional elements section comprises:

extracting an element identifier associated with the value of each optional element present in the content description.

89. (Previously Presented) The computer-readable medium of claim 88, wherein extracting from the optional elements section further comprises:

extracting a repeat field associated with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

extracting the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

90. (Previously Presented) The computer-readable medium of claim 73 further comprising:

extracting a reset field, the reset field specifying a different context node in the content description.

91. (Currently Amended) A system comprising;

a processor coupled to a bus;

a memory coupled to the processor through the bus; and

a decode process for an encoded instance document representing a content description, the decode process executed by the processor from the memory to cause the processor to

obtain a schema associated with a context node in the instance document, the context node being one of a plurality of context nodes corresponding to a description scheme for a particular multimedia content described by an instance document, the schema defining required attributes, optional attributes, required elements, and optional elements for the context node, with the optional attributes and optional elements having an order, wherein the plurality of context nodes are represented in the encoded instance document as a plurality of data structures,

extract a value for each required attribute from a required attributes section when present in the encoded instance document,

extract a value for each optional attribute that appears in the content description from an optional attributes section when present in the encoded instance document,

extract a value for each required element from a required elements section when present in the encoded instance document, and

extract a value for each optional element that appears in the content description from an optional elements section when present in the encoded instance document.

92. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional attributes section, to extract a mask from a header of the optional attributes section, the mask indicating which of the optional attributes defined in the schema are present in the content description.

93. (Previously Presented) The system of claim 92, wherein the decode process further causes the processor, when extracting from the optional attributes section, to extract an order field from the header of the optional attributes section, the order field indicating that the optional attributes present in the content description correspond to the order of the optional attributes in the schema.

94. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional attributes section, to

extract an order field from a header of the optional attributes section, the order field indicating that the optional attributes present in the content description do not correspond to the order of the optional attributes in the schema,

extract a number field from the header of the optional attributes section, the number field indicating a count of the optional attributes present in the content description, and

extract an attribute identifier associated with the value of each optional attribute present in the content description.

95. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the required elements section, to extract an element identifier associated with the value of a required element if the schema defines a choice of values for the corresponding required element.

96. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the required elements section, to extract a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

97. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional elements section, to extract a mask from a header of the optional elements section, the mask indicating which of the optional elements defined in the schema are present in the content description.

98. (Previously Presented) The system of claim 97, wherein the decode process further causes the processor, when extracting from the optional elements section, to extract an order field from the header of the optional elements section, the order field indicating that the optional elements present in the content description correspond to the order of the optional elements in the schema.

99. (Previously Presented) The system of claim 97, wherein the decode process further causes the processor, when extracting from the optional elements section, to extract a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

100. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional elements section, to

extract an order field from a header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema,

extract a number field from the header of the optional elements section, the number field indicating a count of the optional elements present in the content description, and

extract an element identifier associated with the value of each optional element present in the content description.

101. (Previously Presented) The system of claim 100, wherein the decode process further causes the processor, when extracting from the optional elements section, to

extract a repeat field associated with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences, and

extract the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

102. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the required attributes section, to extract an element identifier associated with the value of each required attribute.

103. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional attributes section, to extract an

attribute identifier associated with the value of each optional attribute present in the content.

104. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the required elements section, to extract an element identifier associated with the value of each required element.

105. (Previously Presented) The system of claim 104, wherein the decode process further causes the processor, when extracting from the required elements section, to extract a terminator field for a required element in the required elements section if the schema defines the corresponding required element as an unbounded sequence.

106. (Previously Presented) The system of claim 91, wherein the decode process further causes the processor, when extracting from the optional elements section, to extract an element identifier associated with the value of each optional element present in the content description.

107. (Previously Presented) The system of claim 106, wherein the decode process further causes the processor, when extracting from the optional elements section, to

extract a repeat field associated with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences, and

extract the element identifier associated with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

108. (Previously Presented) The system of claim 91 wherein the decode process further causes the processor to extract a reset field, the reset field specifying a different context node in the content description.